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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,148	03/26/2001	E. D. Thomas III	N.C. 79,597	7420

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Code 1008.2, Naval Research Laboratory
4555 Overlook Ave., S.W.
Washington, DC 20375-5320

EXAMINER

ODA, CHRISTINE K

ART UNIT	PAPER NUMBER
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2858

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DATE MAILED: 06/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/816,148

Applicant(s)
Thomas et al

Examiner
Christine K. Oda

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____
- 2a) ☐ This action is FINAL.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 and 35 is/are rejected.
- 7) ☒ Claim(s) 32-34 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)

- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4

- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____

- 5) ☐ Notice of Informal Patent Application (PTO-152)

- 6) ☐ Other: _____

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Part III. DETAILED ACTION***Informalities***

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. §103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. §1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. §103(c) and potential 35 U.S.C. §102(f) or (g) prior art under 35 U.S.C. §103(a).

Abstract

2. The abstract of the disclosure is objected to because: There are two periods at the end of a sentence on line 9. Correction is required, M.P.E.P. §608.01(b). The Applicant is reminded that if an amended Abstract is submitted, an abstract on a separate sheet is required, 37 C.F.R. §1.72(b).

Information Disclosure Statement

3. The Patent No. "5,466,369" has been changed to "5,445,369" on IDS dated 03/28/01 (Paper #4) since a copy of that document was provided by the applicant.

Claim Rejections - 35 U.S.C. § 112**35 U.S.C. § 112 Second Paragraph**

The following is a quotation of the second paragraph of 35 U.S.C. §112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 13 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite because the phrase "type" renders the claim indefinite because it is unclear what "type" is intended to convey, *Ex parte Copenhaver*, 109 USPQ 118 (Bd. App. 1955), M.P.E.P. 2173(b).

Claim Rejections - 35 U.S.C. §102

The following is a quotation of the appropriate paragraphs of 35 U.S.C §102 that form the basis for the rejections under this section made in this Office action.

5 A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 8, 9, 14, 15, 22-24, 28, 29, and 35 are rejected under 35 U.S.C §102
10 as being anticipated by Sabins (4,107,017).

A. With respect to Claim 1, Sabins teaches an apparatus comprising, a half cell (#16) measuring a potential of a tank, considered to be a hull, the measured potential indicating an amount of corrosion of the tank and the cathodic protection level of the tank (Col. 3, lines 33-34).

15 B. With respect to Claim 2, Sabin teaches the claimed anode (#20) measuring a current demand of cathodic areas of a tank, the current demand indicating the amount of corrosion of the tank and the level of coatings degradation.

C. With respect to Claim 3, Sabins teaches wherein the indicated amount of corrosion is in one of at least two different ranges (Col. 4, line 54-Col. 5, line 32).

20 D. With respect to Claim 4, Sabins teaches a polarization corresponding to the measured potential is used to determine the amount of corrosion of the tank and the cathodic protection level of the tank (Col. 2, lines 64-65).

E. With respect to Claim 5, Sabins teaches wherein the polarization is above a specific level indicating that the amount of corrosion is in a first range of the
25 one of at least two different ranges (Col. 4, line 54-Col. 5, line 32).

F. With respect to Claim 8, Sabins teaches an anode measuring a current demand of cathodic areas of a tank, the current demand indicating an amount of corrosion of the tank (#20).

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G. With respect to Claim 9, Sabins teaches wherein the indicated amount of corrosion is in one of at least two different ranges (Col. 4, line 54-Col. 5, line 32).

H. With respect to Claim 14, Sabins teaches an apparatus comprising, half cells (#16) measuring a potential which corresponds to a polarization of a tank, and an anode #20) measuring a current demand of cathodic areas of a tank, the polarization and the measured current demand together indicating an amount of corrosion of the tank and the level of coatings degradation (Col. 3, lines 33-34).

I. With respect to Claim 15, Sabins teaches wherein the indicated amount of corrosion is in one of at least two different ranges (Col. 4, line 54-Col. 5, line 32).

J. With respect to Claims 22-24, Sabins teaches a range of -1000 mV to below -585 mV (Col. 4, line 54-Col. 5, line 30) wherein the specific level is more negative than -900mV.

K. With respect to Claim 28, Sabins teaches a method comprising, measuring a potential which corresponds to a polarization of a tank, and measuring a current output of an instrumented sacrificial anode, the polarization and the measured current output together indicating an amount of corrosion of the tank and the level of coatings degradation, as stated above.

L. With respect to Claims 29 and 35, Sabins teaches a method and apparatus comprising, first means for measuring a potential which corresponds to a polarization of a tank, and second means for measuring a current output of an instrumented sacrificial anode, the polarization and the measured current output together indicating an amount of corrosion to the tank and the level of coatings degradation, as stated above.

Claim Rejections - 35 U.S.C. §103

The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 8, 14, 28, 29, and 35 are rejected under 35 U.S.C. §103(a) as being
5 unpatentable over Rizzo (4,228,399)

A. With respect to Claim 1, Rizzo teaches an apparatus comprising, the claimed half cell measuring a potential (Col. 1, lines 44-48) a pipeline, the measured potential indicating an amount of corrosion of the tank and the cathodic protection level of the tank (Col. 4, lines 55-66). Rizzo teaches using the device
10 on a pipeline, and lacks the tank. To use the device on a tank is only one of numerous places one of ordinary skill in the art would have found obvious to monitor corrosion since both a pipeline and tank both are used to hold, transport or store liquids.

B. With respect to Claim 2, Rizzo teaches the claimed anode measuring a
15 current demand of cathodic areas of a tank, the current demand indicating the amount of corrosion of the tank and the level of coatings degradation (Col. 5, lines 36-37).

C. With respect to Claim 8, Rizzo teaches an apparatus comprising, an anode measuring a current demand of cathodic areas, the current demand indicating an
20 amount of corrosion of the tank (Col. 2, lines 8-12; Col. 2, lines 55-58; Col. 5, lines 36-37). As to the tank, one of ordinary skill in the art would have found it obvious for the reasons given in paragraph 6A, above.

D. With respect to Claim 14, Rizzo teaches an apparatus comprising, half
25 cells measuring a potential which corresponds to a polarization (Col. 6, lines 45-48), and an anode measuring a current demand of cathodic areas of a tank, the polarization and the measured current demand together indicating an amount of corrosion of the tank and the level of coatings degradation (Col. 2, lines 8-12; Col. 2, lines 55-58; Col. 5, lines 36-37). As to the tank, one of ordinary skill in the art would have found it obvious for the reasons given in paragraph 6A, above.

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E. With respect to Claim 28, Rizzo teaches a method comprising, measuring a potential which corresponds to a polarization (Col. 6, lines 45-48), and measuring a current output of an instrumented sacrificial anode (Col. 2, lines 39-40), the polarization and the measured current output together indicating an amount of corrosion of the tank and the level of coatings degradation (Col. 2, lines 8-12; Col. 2, lines 55-58; Col. 5, lines 36-37). As to the tank, one of ordinary skill in the art would have found it obvious for the reasons given in paragraph 6A, above.

F. With respect to Claims 29 and 35, Rizzo teaches an apparatus and method comprising, first means for measuring a potential which corresponds to a polarization (Col. 6, lines 45-48), and second means for measuring a current output of an instrumented sacrificial anode (Col. 2, lines 39-40), the polarization and the measured current output together indicating an amount of corrosion to the tank and the level of coatings degradation (Col. 2, lines 8-12; Col. 2, lines 55-58; Col. 5, lines 36-37). As to the tank, one of ordinary skill in the art would have found it obvious for the reasons given in paragraph 6A, above.

7. Claims 6, 7, 10-13, 16-21, 25-27, 30, and 31 are rejected under 35 U.S.C. §103(a) as being unpatentable over Sabins (4,107,017).

A. With respect to Claims 6, 7, and 16-18 Sabins teaches lacks teaching that when the polarization is within a specific level, it indicates that the amount of corrosion is between a first and second range of the one of at least two different ranges. Sabins teaches that the polarization is related to corrosion (Col. 6, lines 9-12). To compare polarization is only one of various measurements one of ordinary skill in the art would have found obvious in order to determine corrosion (Col. 4, line 54-Col. 5, line 32).

B. With respect to Claims 10-12, and 19-21 Sabins lacks teaching wherein the measured current output is within a specific level indicating that the amount of corrosion of the tank is between a first and second range of the one of at least two different ranges. To compare currents is only one of various measurements one of

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ordinary skill in the art would have found obvious in order to determine corrosion (Col. 4, line 54-Col. 5, line 32), since the amount of current is proportional to corrosion.

5 C. With respect to Claim 13, Sabins teaches a instrumented sacrificial anode which uses zinc (Col. 3, lines 47-49). To use ZHC-24 zinc is only one of various kinds of specific zinc materials one of ordinary skill in the art would have found obvious for the purpose of providing a material that has a more negative potential of electrochemical reaction.

10 D. With respect to Claims 25-27, Sabins lacks the specific level in mA. One of ordinary skill in the art would have readily recognize to use amperes instead of volts, in comparing levels is more dependent on the data collected.

15 E. With respect to Claims 30 and 31, Sabins fails to teach comparing the amount of corrosion of the tank with amounts of corrosion in other tanks, and determining which of the tanks requires maintenance. One of ordinary skill in the art would have readily recognize the advantage and desirability to compare corrosion in order to remove and repair the tank before a leak occurs.

8. Claims 32-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the
20 base claim and any intervening claims.

Prior Art Cited

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References cited but not applied against the claims are considered to be of interest and should be carefully considered by the applicant.

25 Hladky (5,069,453) Polly (4,927,503), Matsuoka (4,861,453) and Winneti (4,758,324) teach a half cell of use in determining potential differences to asses corrosion activity in structures.

Gurusamy (GB 2 224 852) teaches a corrosion monitor using a half cell and current measuring device to monitor potential and current.

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Contact Information

5 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine K. Oda whose telephone number is (703) 305-3857. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le, can be reached on (703) 308-0750.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center receptionist whose telephone number is (703) 308-0956.

10 A Technology Center fax for FILING Technology Center 2800 PAPERS ONLY is available at (703) 308-7722 or (703) 308-7724.

CKO: cko
11 June 2002

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Christine K. Oda
Christine K. Oda
Primary Examiner
Art Unit 2858